Name: Date:
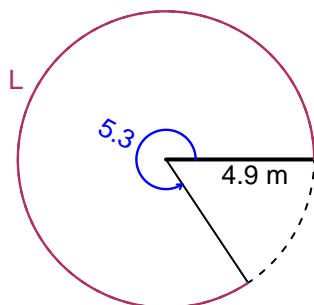
Trig Final (TEST v696)

- You should have a calculator (like Desmos) and a unit-circle reference sheet.
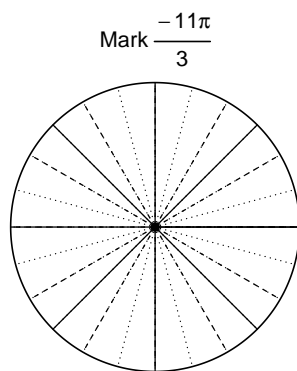
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The radius is 4.9 meters. The angle measure is 5.3 radians. How long is the arc in meters?
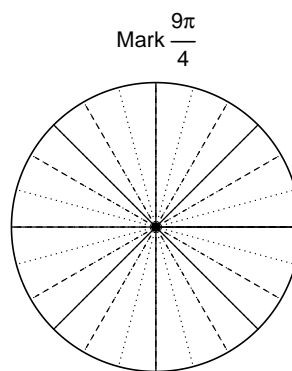

Question 2

Consider angles $\frac{-11\pi}{3}$ and $\frac{9\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\sin\left(\frac{-11\pi}{3}\right)$ and $\cos\left(\frac{9\pi}{4}\right)$ by using a unit circle (provided separately).

Mark $\dfrac{-11\pi}{3}$

Find $\sin(-11\pi/3)$

Mark $\dfrac{9\pi}{4}$

Find $\cos(9\pi/4)$

Question 3

If $\sin(\theta) = \frac{-15}{17}$, and θ is in quadrant IV, determine an exact value for $\tan(\theta)$.

Question 4

A mass-spring system oscillates vertically with an amplitude of 2.4 meters, a frequency of 6.05 Hz, and a midline at $y = -3.57$ meters. At $t = 0$, the mass is at the midline and moving up. Write an equation to model the height (y in meters) as a function of time (t in seconds).